FACT SHEET FOR NPDES PERMIT WA-002015-0
FACILITY NAME: CITY OF BURLINGTON

SUMMARY

This fact sheet is a companion document to the draft National Pollutant Discharge Elimination System (NPDES) Permit for the City of Burlington Wastewater Treatment Plant (WWTP). The fact sheet explains the nature of the proposed discharges, the Department of Ecology's (the Department's) decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions. The fact sheet and draft permit are available for review (see Appendix A--Public Involvement for more detail on the public notice procedures).

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the Wastewater Discharge Permit Program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty (30) days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the public notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit, and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	City of Burlington
Responsible Official Mailing Address Phone Number	The Honorable Roger A. Tjeerdsma, Mayor 900 E. Fairhaven Avenue Burlington, WA 98233 360-755-0531
Facility Name Address	Burlington Wastewater Treatment Plant 900 South Section Street Burlington, WA 98233
Facility Contact Name Phone Number	Roger LaRue, Sewer Department Supervisor (360) 757-4085 Rod Garrett, Director of Public Works (360) 755-9715
Type of Treatment	Secondary Treatment with Activated Sludge
Discharge Location	Latitude: 48° 28' 04" N Longitude: 122° 18' 30" W
Water Body ID Number	WA-03-1010

WATER BODY

The City of Burlington Wastewater Treatment Plant discharges into the lower Skagit River at Burlington.

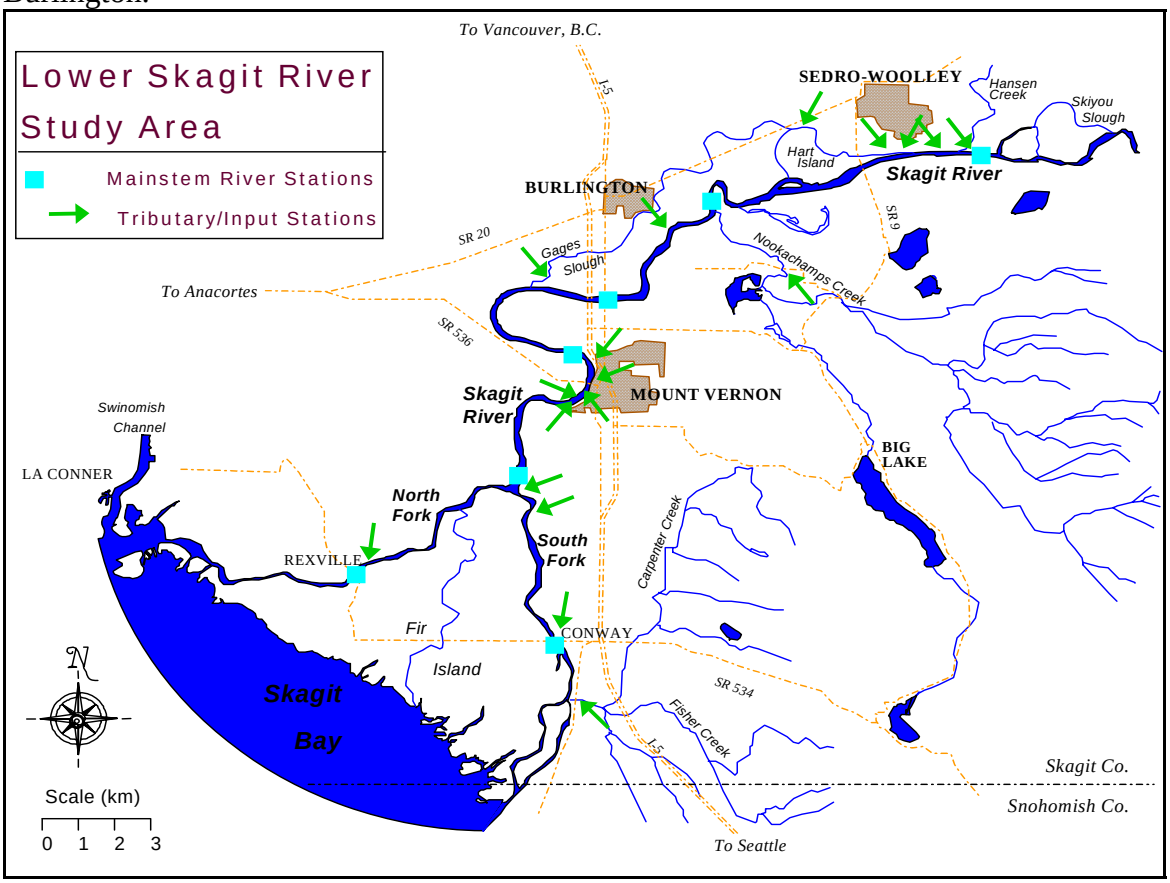

FIGURE 1. WATER BODY LOCATION[1]

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

Burlington installed a sewage collection system and trickling filter wastewater treatment plant in 1946. A conventional mixed activated sludge plant was constructed in 1976 to accommodate growth and Clean Water Act requirements for secondary treatment. In 1993, Ecology notified the City that the treatment plant was approaching its design capacity of 1.61 MGD and that planning to increase the capacity was needed.

In 1995, Ecology approved a minor upgrade of the plant with the condition that the town performs a stress test after the upgrade to demonstrate increased capacity. The upgrade involved enhancing the mixed activated sludge process by installing selectors (zones of low dissolved oxygen) and fine

[1] Butkus, Steve, Gerald Shervey, Paul J. Pickett, Lower Skagit River Dissolved Oxygen Total Maximum Daily Load, May 2000, p. 5.

bubble diffusers in the aeration basins but not any additional treatment units. This upgrade was completed by 1996. The plant has met permit limitations at flows above 2 MGD consistently since the minor upgrade and Burlington is constructing an extensive plant upgrade.

In October 1997, the Department issued approval of a facilities plan for plant improvements designed to provide capacity for the projected year 2015 flow of 5.1 MGD. Growth planning for the Burlington service area anticipates that the Burlington Wastewater Treatment Plant (WWTP) will more than double in size over the next twenty years due to additional flows within the City, the Port of Skagit, and urban growth areas in Skagit County near the City.

COLLECTION SYSTEM STATUS

The collection system includes approximately 55 miles of pipe and 20 lift stations. Six lift stations have emergency power generators. A trailer-mounted generator is used at other lift stations as needed. The lift stations are equipped with power, pump and level failure alarms and a dialer system for notification of problems.

The City's I & I Reduction Program budgets $150,000-per-year (based on 2003) budget to address I/I problems on an "as needed" basis. There is not a specific program to proactively address I/I in part due to the extra treatment capacity currently available.

TREATMENT PROCESSES

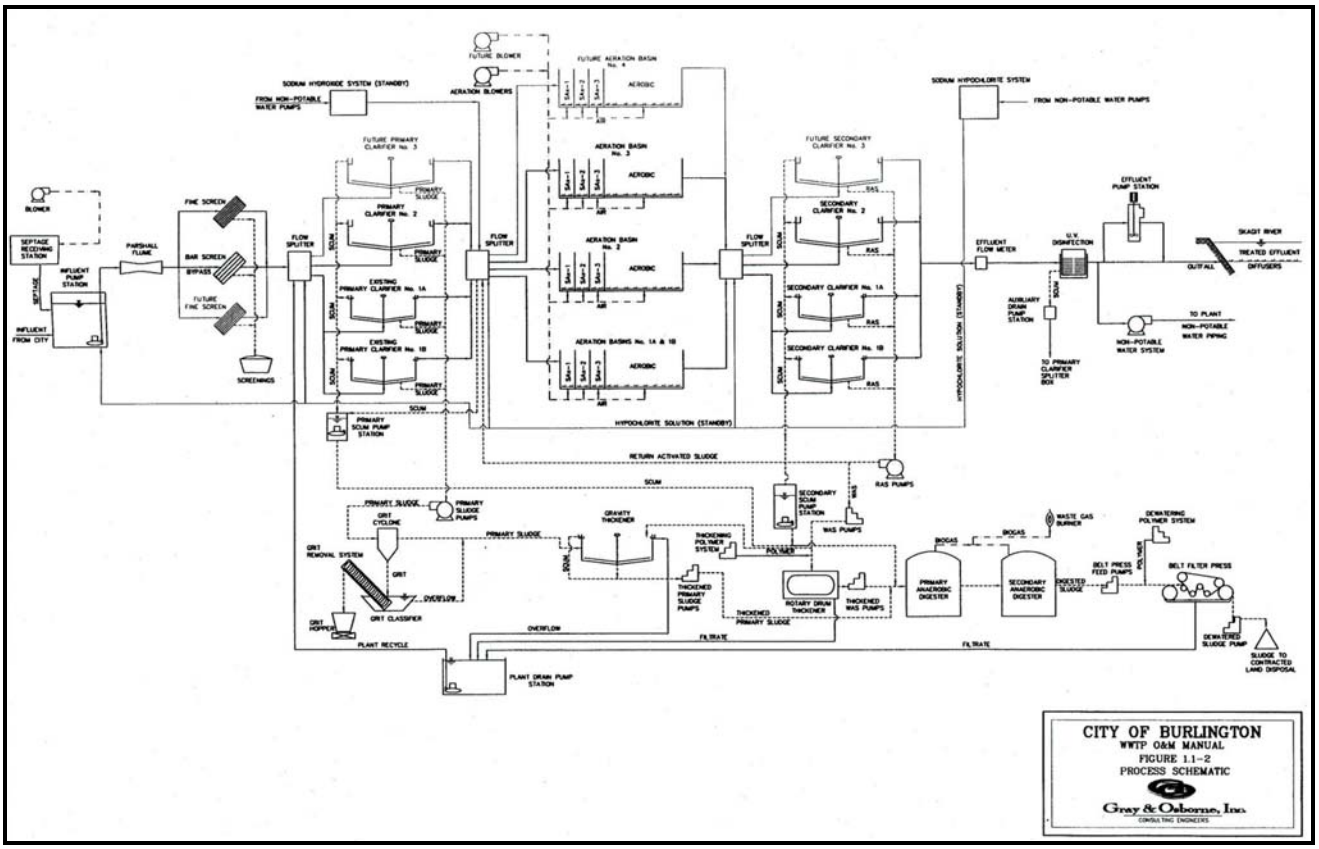

Figure 2. Wastewater Treatment Plant – Process Diagram

The headworks were reconstructed in 1997. The influent is pumped up to the Parshall flume where the influent flow is measured and the influent samples are drawn. The treatment plant has one Lakeside® screen used to remove, dewater, and compact the rags removed from the influent, and a comminutor as a backup. The rags are collected in a dumpster and disposed of at a landfill. The influent flows through a diversion structure and into 1-of-3 primary clarifiers.

The primary effluent flows to the aeration basin(s) for secondary treatment. Installed with the 1999 facility upgrades, the aeration basin is equipped with fine-bubble diffusers. Blowers provide air to the aeration basin. Dissolved oxygen (DO) analyzers in the basins provide real-time data for automatically controlling the air supplied to the aeration basins. Return activated sludge (RAS) is pumped to the basins based on a percentage of the influent flow and is automatically controlled. The water flows from the aeration basins through a diversion structure into the secondary clarifiers (3 in total).

The secondary effluent flows through the UV disinfection channel, and the final effluent sample is taken prior to discharge to the outfall. The effluent normally flows by gravity, or when the Skagit River level in high is pumped, to the outfall diversion structure. The outfall is well designed to protect the facility in the event of high river levels. The design features include a tall levee, floodgate in the outfall diversion structure on level control, and auto-start outfall pumps. The outfall was modified in 1999-2001 in such a way that 4 pipelines extend from the outfall diverter into the Skagit River. Each outfall pipe is equipped with a diffuser.

The solid waste from the process is pumped from the clarifiers. Sludge is pumped from the primary clarifier to the degritter for grit removal, and then flows to a gravity thickener and then to the primary digester. A large percentage of sludge from the secondary clarifiers is recycled as RAS to the aeration basins. The waste activated sludge (WAS) is pumped to the rotary drum thickener, and the thickened sludge is pumped to the primary digester. A portion of the methane gas generated in the digesters is used to fire the boiler and the remainder is flared. The boiler is used to heat water circulating in a closed-loop through a heat exchanger that in turn is used to heat the digester sludge. The digested sludge is de-watered using the belt filter. Flocculants are added prior to thickening and filtering to aid in the dewatering of the sludge. A dryer is used to further dry the solids. The final solids produce meets the class A biosolids standard.

In 2000, an additional treatment train was constructed at the WWTP to increase capacity from 1.61 MGD to 3.79. The City anticipates upgrading the plant (phase II upgrade) to a capacity of 5.05 MGD to provide capacity until 2015. There are no plans for the phase II upgrades at this time. Each of these upgrades involves constructing additional trains with the same configuration as is in place now. The 2005 expansion will not be implemented until the flows to the facility reach 85% of the current design capacity.

Various industries in the City and at the Port of Skagit discharge to the City of Burlington. The table below describes those dischargers that discharge under State Waste Discharge Permits. None are considered significant industrial users (SIU).

Name	Description
Fibrex Corporation	Intermittent 5000 gpd discharge of untreated resin tool cleaning water & noncontact cooling water
Puget Power - Fredonia	Intermittent discharge noncontact cooling water
Paccar	Small volumes truck wash and noncontact cooling water

Other commercial discharges include the Skagit Valley Casino, businesses in Burlington, and various industries at the Port of Skagit. The treatment plant also treats 5000 to 6000 gpd of septage from residential septic tanks in the area.

The Burlington WWTP is classified as a Class 3 WWTP under state regulation. The permit requires that a sewage treatment plant operator certified to operate a Class 3 WWTP be in responsible charge of the operation of the plant. The plant and collection system is serviced by a staff of six city employees for an 8-hour shift. The plant is equipped with automatic dialers and alarms to alert staff of problems during periods when no operators are in attendance.

DISCHARGE OUTFALL

Secondary treated and disinfected effluent is discharged from the facility into the Skagit River. The effluent is discharged from the diversion vault through 4 separate ductile iron outfall pipes. Each outfall pipe is equipped with a diffuser. The outfall pipe extends 47 feet from shore and is 7.75 feet below the surface of the water.

RESIDUAL SOLIDS

The treatment facility removes solids during the treatment of the wastewater at the headworks (grit and screenings), and at the secondary clarifier(s), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifier(s) are treated using aerobic digestion and then dewatered using a belt filter. Since 2004, when the sludge dryer was put into operation, solids have been marketed as Class-A-EQ dried biosolids to a local topsoil company. As needed, biosolids are we land-apply at Ryegrass Ranch, a permitted site near Vantage, WA.

PERMIT STATUS

The previous permit for this facility was issued on October 18, 1999. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and an interim limit for Total Residual Chlorine.

An application for permit renewal was submitted to the Department on May 1, 2003, and accepted by the Department as complete on May 23, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last compliance inspection without sampling on April 28, 2005. The last Class 2 inspection with sampling was conducted on September 8, 2001. No compliance-related issues were sited as a result of these inspections.

During the history of the previous permit, the Permittee has remained in good compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. Table 3, Violation Summary, lists all the violations as noted in the WPLCS database. WPLCS stands for *Water Permit Life Cycle System* and is the name of the database used to store, retrieve, and report DMR data that has been submitted to Ecology by Permittees. The fecal coliform violations, which occurred in 2000, occurred during the time in which the facility was converting from disinfection with chlorine to disinfection using ultraviolet light. Table 4, DMR Summary, shows the Permittee's compliance with the effluent limits during the time period indicated. For a complete summary of DMR data and compliance history, refer to Appendix C, Tables 15 and 16, for influent and effluent data, respectively.

TABLE 3: VIOLATION SUMMARY NOVEMBER 1999 TO MARCH 2005

Begin Date	Parameter	Value Type	Units	Value	Max Limit
1-Sep-00	COLIFORM, FECAL	GM7	#/100 ML	600	400
1-Oct-00	COLIFORM, FECAL	GEM	#/100 ML	589	200
1-Oct-00	COLIFORM, FECAL	GM7	#/100 ML	600	400
1-Nov-00	COLIFORM, FECAL	GEM	#/100 ML	407	200
1-Nov-00	COLIFORM, FECAL	GM7	#/100 ML	631	400
1-Dec-00	COLIFORM, FECAL	GEM	#/100 ML	219	200
1-Dec-00	COLIFORM, FECAL	GM7	#/100 ML	517	400
1-Jan-01	SOLIDS, TOTAL SUSPENDED	AVW	LBS/DAY	890	605
1-Jan-01	SOLIDS, TOTAL SUSPENDED	MAX	MG/L	68	45
1-Feb-01	COLIFORM, FECAL	GEM	#/100 ML	269	200
1-Feb-01	COLIFORM, FECAL	GM7	#/100 ML	452	400
1-Dec-03	COLIFORM, FECAL	GM7	#/100 ML	449	400
1-Apr-04	COLIFORM, FECAL	GM7	#/100 ML	547	400

TABLE 4: DMR SUMMARY NOVEMBER 1999 TO MARCH 2005

Analysis	Units		Limit	Maximum	Minimum	Average
BOD, 5-DAY (20 DEG. C)	AVG	LBS/DAY	**403**	252.0	42.0	104.2
BOD, 5-DAY (20 DEG. C)	AVG	MG/L	**30**	16.0	5.0	9.1
BOD, 5-DAY (20 DEG. C)	AVW	LBS/DAY	**605**	296.0	65.0	141.6
BOD, 5-DAY (20 DEG. C)	AVW	MG/L	**45**	32.0	6.0	12.7
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	**85**	98.0	93.0	97.1
CHLORINE, TOTAL RESIDUAL	AVG	MG/L	**0.50**	0.4	0.4	0.4
CHLORINE, TOTAL RESIDUAL	MAX	MG/L	**0.75**	0.8	0.6	0.7
COLIFORM, FECAL	GEM	#/100 ML	**200**	589.0	3.0	52.5
COLIFORM, FECAL	GM7	#/100 ML	**400**	631.0	7.0	137.5
PH	MAX	S.U.	**9**	7.9	6.7	7.2
PH	MIN	S.U.	**6.3**	7.0	6.0	6.6
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	**85**	98.0	87.0	96.3
SOLIDS, TOTAL SUSPENDED	AVG	LBS/DAY	**403**	268.0	49.0	111.2
SOLIDS, TOTAL SUSPENDED	AVG	MG/L	**30**	21.0	4.0	9.6
SOLIDS, TOTAL SUSPENDED	AVW	LBS/DAY	**605**	890.0	67.0	161.4
SOLIDS, TOTAL SUSPENDED	MAX	MG/L	**45**	68.0	6.0	13.8

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in Discharge Monitoring Reports. Table 3 is a summary of the effluent analytical data of pollutants found in a **detectable** quantity as submitted with the EPA Form 2A application for NPDES permit renewal. The effluent is characterized as follows:

TABLE 5: WASTEWATER CHARACTERIZATION

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD
	Conc.	Units	Conc.	Units	No. of Samples	
BOD_5	22	mg/L		mg/L	156	
FECAL COLIFORM	440	mg/L	16	mg/L	257	
TOTAL SUSPENDED SOLIDS	42	mg/L	10	mg/L	365	
AMMONIA (as N)	11.1	mg/L		mg/L	5	
DISSOLVED OXYGEN	6.4	mg/L	4.1	mg/L	365	SM4500-O G.
CHROMIUM	0.007	mg/L	0.006	mg/L	14	200.8
COPPER	0.024	mg/L	0.017	mg/L	14	200.8
LEAD	0.031	mg/L	0.014	mg/L	14	200.8
MERCURY	0.0003	mg/L	0.0003	mg/L	14	200.8
NICKEL	0.013	mg/L	0.007	mg/L	14	200.8
ZINC	0.12	mg/L	0.065	mg/L	14	

SEPA COMPLIANCE

There are no SEPA compliance issues related to the Permittee.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in an NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the surface water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC), sediment quality standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application.

In those circumstances, the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the construction plans for the City of Burlington Wastewater Treatment Plant Upgrade (Earth Tech, 1998). The items from that report relevant to the permit are as follows:

DESIGN STANDARDS FOR BURLINGTON WWTP

Parameter	Previous Permit Basis	PERMIT BASIS 2000 Upgrade (Phase I)	2005 Upgrade (Phase II)[2]
Monthly average flow (max. month)	1.61 MGD	**3.79 MGD**	5.05 MGD
BOD_5 influent loading	3,181 lb/day	**7,356 lb/day**	9,585 lb/day
TSS influent loading	3,181 lb/day	**7,660 lb/day**	10,000 lb/day
Maximum Daily Flow peaking factor	(1.75 PF)	(PF = peaking factor, the ratio of event to the monthly average flow)	
Peak Hourly Flow peaking factor	(2.5 PF)		

[2] The facility will not proceed with the Phase II expansion, which was originally planned for 2005, until the flow capacity approaches the current design capacity.

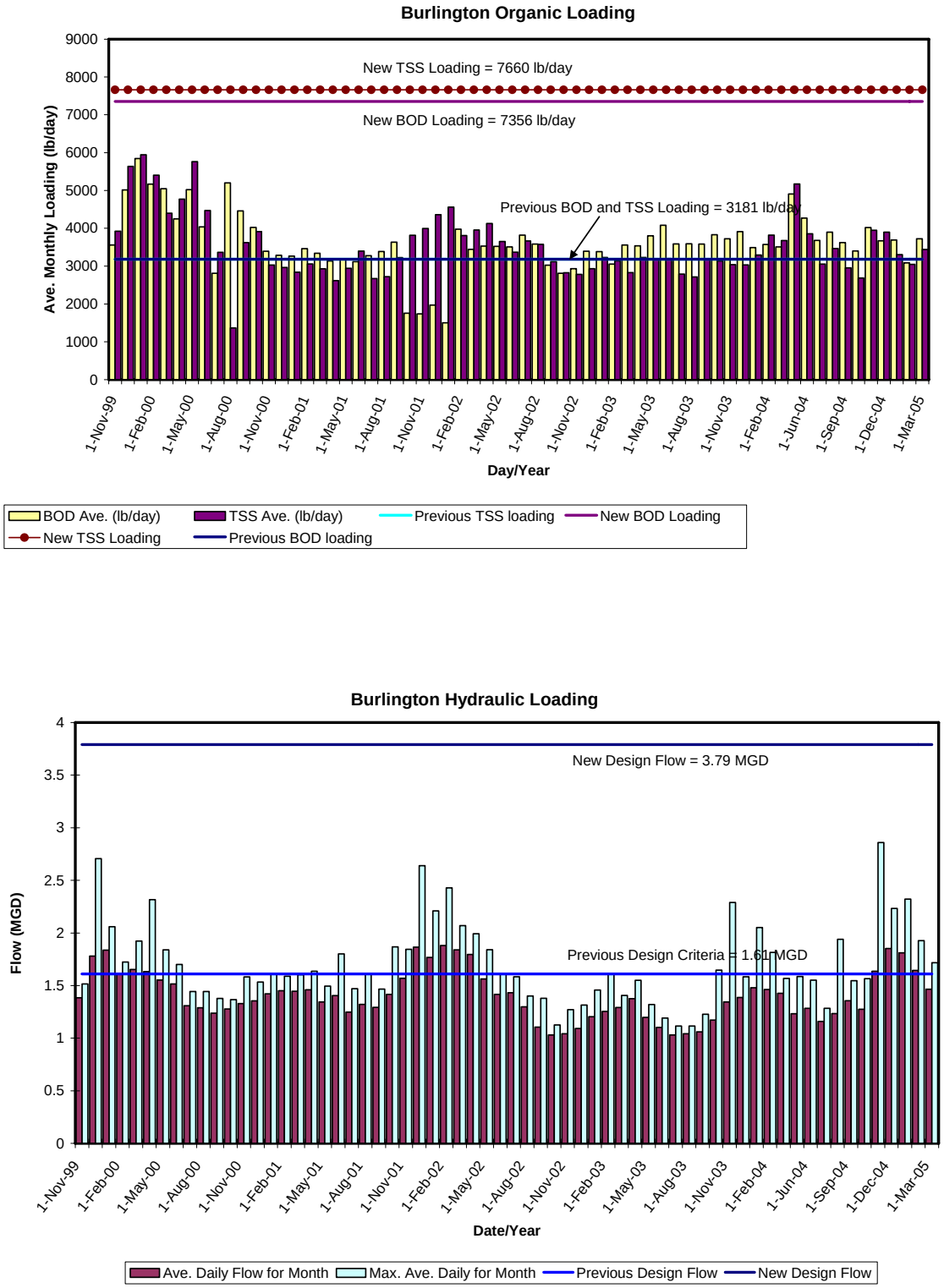

FIGURE 6: ORGANIC AND HYDRAULIC LOADING VS. DESIGN CRITERIA

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

TABLE 7: TECHNOLOGY-BASED LIMITS

Parameter	Limit
pH	Shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

Monthly effluent mass (BOD_5 and TSS) loadings (lbs/day) were calculated as the maximum monthly design flow (3.79 MGD) x concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit **948 lbs/day**.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = **1422 lbs/day**.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established surface water quality standards. The Washington State surface water quality standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's water quality standards for surface waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the water quality standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other diseases and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

Based on existing records and available ambient monitoring data, the ambient water quality meets the chemical and physical criteria given in Chapter 173-201A WAC designated for this water body except for high levels of fecal coliform bacteria during winter months. Studies by the Department concluded that the contribution from WWTPs on the Skagit River are not a significant source of bacteria so long as the plants discharge at levels below the technology-based levels already included in the discharge permit. The Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic waterbody uses.

MIXING ZONES

The water quality standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control, and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100(a) for rivers.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Skagit River, which is designated as a Class A freshwater receiving water in the vicinity of the outfall. This discharge reaches the marine waters of Skagit Bay within a day or so. Significant nearby non-point sources of pollutants include municipal storm runoff and local agricultural facilities. Characteristic uses include water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing (in downstream marine waters), spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses. The City of Anacortes drinking water plant withdraws significant volumes of river water for water supply downstream of the outfall of the plant. The Skagit River supports several species of native salmon and steel head. Skagit Bay has the potential to grow shellfish for commercial purposes.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts

LOWER SKAGIT RIVER TOTAL MAXIMUM DAILY LOAD (TMDL)

In July 1997, the Department published the Lower Skagit River Total Maximum Daily Load and Water Quality Study (Pickett, 1997). The goal of the lower Skagit River TMDL study was to assure compliance with state standards for **dissolved oxygen** and **fecal coliform bacteria** levels in the river and Skagit Bay. The study covered the lower 25 miles of the river, from river mile (RM) 24.6 near Burlington to the mouths of the North and South Forks at Skagit Bay. Ecology collected data on ambient water quality and treated wastewater discharges in the river in 1994 and 1995. The effects of the discharges on ambient water quality were modeled for worst case river conditions under current and future discharge scenarios. Based on the modeling, the proposed TMDL sets waste load allocations (WLAs) for BOD and ammonia discharged from point sources. To restore compliance with standards for fecal coliform bacteria, the TMDL sets WLAs for point sources and priorities for reducing or eliminating other sources of bacteria discharge to the Skagit and its tributaries.

The Lower Skagit River Dissolved Oxygen Total Maximum Daily Load Submittal Report (Department of Ecology Publication No. 00-10-031, May 2000) concluded that the standard for dissolved oxygen is being met in the lower Skagit River.

The TMDL study concluded that fecal coliform bacteria levels exceed standards in many tributaries of the lower Skagit River, upstream of Burlington, and in the marine waters at the mouths of the North and South Forks. The TMDL identifies areas and sources as high priority for reducing discharge of bacteria. Discharge of fecal coliform bacteria at the levels required as a technology-based permit limitations (200 per 100 mL) will provide adequate compliance with the discharge levels recommended in the TMDL. Specifically, the TMDL concludes that the reduction of bacteria discharge from the sewage treatment plants does not provide any significant reduction to the total bacteria counts during those periods when bacteria loading from nonpoint pollution sources are discharged to the river.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

Chronic: Chronic mixing zone is limited to a distance of **309 feet (94 meters)** downstream of the outfall diffuser.

Acute: The zone of acute water quality criteria exceedance is limited to **30.9 feet (9.4 meters)** downstream of the outfall diffuser.

The **dilution factors** of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of computer model, PLUMES. Dilution of the discharge is reported as a function of flow in the latest Wastewater Facilities Plan (Gray &

Osborne, Inc., 1997). Supplemental Modeling was completed by Beak Consultants, Inc.[3] for Grey & Osborne for the configuration of the new outfall installed in 2000. Based on Beak's supplemental modeling the acute and chronic dilution factors used for the permit basis are as follows:

	Acute	**Chronic**
Aquatic Life	15.2	41.6
Human Health, Carcinogen		Not determined
Human Health, Non-carcinogen		Not determined

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near-field) or at a considerable distance from the point of discharge (far-field). Toxic pollutants, for example, are near-field pollutants, the adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Skagit River is the seven-day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the outfall was taken from the TMDL study which considered both historical data and monitoring data.

BOD_5--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature and pH--The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 41.6, upstream temperature 12^{o} C, upstream pH 7.5, upstream alkalinity 20 (as mg $CaCO_3$/L), effluent temperature 22^{o} C, effluent pH of 6.0, effluent pH of 9, and effluent alkalinity 125 (as mg $CaCO_3$/L).

Under critical conditions, there is no predicted temperature violation of the water quality standards for surface waters. Therefore, temperature was not limited. No heat is added to this discharge during the treatment process. Modeling with extreme values of effluent (22^{o} C) and typical critical season temperatures (12^{o} C) results in a temperature increase of less than 0.1^{o} C based on the chronic dilution factor of 41.6:1. The discharge has no reasonable potential to increase the receiving water temperature above 18^{o} C or increase it by 0.3^{o} C, so no effluent limitation for temperature was placed in the permit.

[3] Letter from C. Andrew Martin and Gary S. Mauseth of Beck Consultants, Inc., to John P. Wilson and Michael Johnson of Gray and Osborne, Inc., regarding *Supplemental Modeling, Wastewater Treatment Plant Discharge Analysis, City of Burlington, Skagit County, Washington*, dated June 5, 1998.

Under critical conditions, there was a prediction of a violation of the pH criteria for the receiving water. An effluent limit of 6.2 to 9.0 for pH was found to meet the water quality criterion for pH. Therefore, these limits were imposed. Input values of upstream pH 7.5, upstream alkalinity 20 (as mg CaCO3/L), effluent pH of 6.0, and effluent alkalinity 125 (as mg CaCO3/L) with the chronic dilution factor 41.6:1 result in an in-stream pH change of 0.5 at the edge of the mixing zone, the maximum allowed for Class A fresh water. Using the same alkalinity values, effluent pH of 9.0 and an ambient pH of 6.2 do not result in any change of pH at the edge of the mixing zone. Refer to Appendix C, Table 13.

Fecal Coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 41.6.

Under critical conditions, there is no predicted violation of the water quality standards for surface waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the water quality standards for surface waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge*: ammonia, chromium, copper, lead, mercury, nickel and zinc*. A reasonable potential analysis (see Appendix C, Tables 9 and 10) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for the above-listed toxic chemicals to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition.

No valid ambient background data was available for above-listed pollutants. A determination of reasonable potential using zero for background resulted in no reasonable potential.

Both Lead and Mercury are very close to having a reasonable potential to exceed the water quality standard for chronic toxicity as shown in Appendix C, Table 10. The determination of reasonable potential is based on a conservative statistical estimate of the likelihood of exceeding the standard. If a reasonable potential exists based on future analytical data, then permit limits may be set for these parameters in future permits.

Metals criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

WHOLE EFFLUENT TOXICITY

The water quality standards for surface waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the

wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, $EC_{50,}$ IC_{25}, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*, which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center at 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

An effluent characterization for acute and chronic toxicity was conducted during the previous permit term. In accordance with WAC 173-205-060, the Permittee must repeat this effluent characterization for the following reason:

The Permittee has made changes to processes, materials, or treatment that could result in an increase in effluent toxicity. In accordance with WAC 173-205-060(1), the proposed permit requires another effluent characterization for toxicity.

TABLE 8: SUMMARY OF WET CHARACTERIZATION

BURLINGTON WWTP ACUTE WET TEST RESULTS AS % SURVIVAL IN 100% EFFLUENT

Test #	Sample Date	Start Date	Lab	Organism	Endpoint	% Survival
AQTX003281	10/2/2001 15:00	10/3/2001 15:00	Parametrix	Fathead minnow	96-hour survival	100.0%
AQTX003282	1/23/2002 8:00	1/24/2002 12:15	AMEC	*Ceriodaphnia dubia*	48-hour survival	100.0%
AQTX003283	1/23/2002 8:00	1/24/2002 13:50	AMEC	Fathead minnow	96-hour survival	50.0%
AQTX003286	5/6/2002 8:00	5/7/2002 14:30	AMEC	*Ceriodaphnia dubia*	48-hour survival	100.0%
AQTX003287	5/8/2002 7:30	5/9/2002 13:15	AMEC	Fathead minnow	96-hour survival	30.0%
AQTX003289	8/20/2002 7:45	8/20/2002 19:00	AMEC	*Daphnia pulex*	48-hour survival	100.0%
AQTX003288	8/20/2002 7:45	8/20/2002 16:30	AMEC	Fathead minnow	96-hour survival	86.7%

BURLINGTON WWTP ACUTE WET TEST RESULTS AS NOEC/LOEC IN % EFFLUENT

Test #	Sample Date	Start Date	Lab	Organism	Endpoint	NOEC	LOEC	MSDp
AQTX003281	10/2/2001 15:00	10/3/2001 15:00	Parametrix	Fathead minnow	96-hour survival	100	> 100	4.16%
AQTX003282	1/23/2002 8:00	1/24/2002 12:15	AMEC	*Ceriodaphnia dubia*	48-hour survival	100	> 100	4.21%
AQTX003283	1/23/2002 8:00	1/24/2002 13:50	AMEC	Fathead minnow	96-hour survival	25	50	17.60%
AQTX003286	5/6/2002 8:00	5/7/2002 14:30	AMEC	*Ceriodaphnia dubia*	48-hour survival	100	> 100	6.29%
AQTX003287	5/8/2002 7:30	5/9/2002 13:15	AMEC	Fathead minnow	96-hour survival	25	50	24.09%
AQTX003289	8/20/2002 7:45	8/20/2002 19:00	AMEC	*Daphnia pulex*	48-hour survival	100	> 100	4.21%
AQTX003288	8/20/2002 7:45	8/20/2002 16:30	AMEC	Fathead minnow	96-hour survival	100	> 100	11.15%

BURLINGTON WWTP CHRONIC WET TEST RESULTS AS NOEC/LOEC IN % EFFLUENT

Test #	Sample Date	Start Date	Lab	Organism	Endpoint	NOEC	LOEC	MSDp
AQTX003279	10/2/2001 15:00	10/3/2001 14:00	Parametrix	*Ceriodaphnia dubia*	7-day survival	100	> 100	
					Reproduction	100	> 100	39.74%
AQTX003280	10/2/2001 15:00	10/3/2001 14:55	Parametrix	fathead minnow	7-day survival	100	> 100	9.35%
					Biomass	100	> 100	20.40%
					Weight	100	> 100	19.21%
AQTX003284	5/6/2002 8:00	5/7/2002 12:30	AMEC	*Ceriodaphnia dubia*	7-day survival	100	> 100	
					Reproduction	25	50	21.02%
AQTX003285	5/6/2002 8:00	5/7/2002 11:50	AMEC	fathead minnow	7-day survival	50	100	11.88%
					Biomass	100	> 100	19.45%
					Weight	100	> 100	22.59%

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard." The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent is likely to have chemicals of concern for human health. The discharger's high priority status is based on the applicant discharges to a waterbody that is 303(d) listed for a regulated chemical, and that chemical is known or expected to be in the effluent.

A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d). The reasonable potential determination was evaluated with procedures given in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and the Department's *Permit Writer's Manual* (Ecology Publication 92-109, July 2002). The determination indicated the discharge has no reasonable potential to cause a violation of water quality standards, thus an effluent limit is not warranted. (Refer to Appendix C, Table 11: Reasonable Potential Calculation)

SEDIMENT QUALITY

The Department has been unable to determine at this time the potential for this discharge to cause a violation of sediment quality standards. If the Department determines in the future that there is a potential for violation of the sediment quality standards, an order will be issued to require the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated ground water quality standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED ON October 18, 1999

Parameter	Limits in 1999 Permit	Proposed Limits
BOD_5	monthly average 30 mg/L, 403 lbs/day weekly maximum 45 mg/L, 605 lbs/day	monthly average 30 mg/L, **948 lbs/day** weekly maximum 45 mg/L, **1422 lbs/day**
TSS	monthly average 30 mg/L, 403 lbs/day weekly maximum 45 mg/L, 605 lbs/day	monthly average 30 mg/L, **948 lbs/day** weekly maximum 45 mg/L, **1422 lbs/day**
pH	shall be within the range of 6.3 to 9 standard units	shall be within the range of **6.2** to 9 standard units
Fecal Coliform Bacteria	monthly average 200/100 mL weekly maximum 400/100 mL	monthly average 200/100 mL weekly maximum 400/100 mL

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Conditions S.2 and S.11. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (revision date, July 2002) for Activated Sludge 2.0 - 5.0 MGD average design flow.

LAB ACCREDITATION

With the exception of certain parameters, the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is accredited for: BOD_5, TSS, fecal coliform bacteria, and pH.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 restricts the amount of flow.

OPERATIONS AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. The Department requires that the permittee review the existing draft operation manual and update and finalize the document.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems, the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Skagit County Health Department.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program [i.e., act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)]**.** Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g., tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, Part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program [40 CFR 403.8(f)(1)(iii)], the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)].

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge [WAC 173-216-110(5)] (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty (60) days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with state water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g., tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities [40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.].

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system." Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a State Waste Discharge Permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State Waste Discharge Permit application.

Requirements for Performing an Industrial User Survey

This POTW has the potential to serve significant industrial or commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of state waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users. A complete listing of methodologies is available in the Department of Ecology guidance document entitled "Conducting an Industrial User Survey."

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition, wastes with excessive BOD, petroleum-based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Support by the Department for Developing Partial Pretreatment Program by POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular, assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

OUTFALL EVALUATION

Proposed permit Condition S.11 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary, to meet water quality standards, sediment quality standards, or ground water standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five (5) years.

REFERENCES FOR TEXT AND APPENDICES

Additional Reference Documents

1997. Wastewater Facilities Plan. Gray and Osborne, Inc., July 1997.

2000. Lower Skagit River Dissolved Oxygen Total Maximum Daily Load. Department of Ecology.

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Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

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1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations (http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html)

Washington State Department of Ecology.

2002. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public Notice of Application (PNOA) was published on September 3, 2002, and September 10, 2002, in the *Skagit Valley Herald* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft (PNOD) on August 19, 2005, in the *Skagit Valley Herald* to inform the public that a draft permit and fact sheet were available for review. Interested persons were invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents were available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments were mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30)-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone (425-649-7201) or by writing to the address listed above.

This permit and fact sheet were written by Karen Burgess.

APPENDIX B—GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART--An acronym for "all known, available, and reasonable methods of prevention, control, and treatment."

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation--The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

$CBOD_5$--The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining $CBOD_5$ is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation, and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring--Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction, e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User--A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference--A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal, and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) [including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA], sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of >80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of <80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/state permits issued under both state and federal laws.

Pass Through--A discharge which exits the POTW into waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State Water Quality Standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g., facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)--A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

TMDL--A TMDL or Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C—TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State Water Quality Standards can be found on the Department's homepage at (http://www.ecy.wa.gov/programs/wq/wastewater/index.html

TABLE 9: WATER QUALITY CRITERIA FOR POLLUTANTS AT DETECTABLE LEVELS

						Water Quality Criteria		Human Health Criteria	Metals Translators		
						Fresh		Fresh	Fresh		
Pollutant	CAS. No.	Application Ref. No.	Based on Hardness	Priority Pollutant	Carcinogen	WQ-F-acute	WQ-M-chronic	HH-F	MT-F-acute	MT-F-Chronic	Source and Comments
AMMONIA unionized -see seperate spreadsheets for FW criteria				N	N	197.00	41.90				WAC 173-201A
CHROMIUM(HEX)	18540299			Y	N	15	10		0.982	0.962	WAC 173-201A
COPPER	744058	6M	25.0	Y	N	4.61	3.47		0.996	0.996	WAC 173-201A
LEAD	7439921	7M	25.0	Y	N	13.88	0.54		0.466	0.466	WAC 173-201A,
MERCURY	7439976	8M		Y	N	2.10	0.012	0.14	0.85		WAC 173-201A, NTR - HH
NICKEL	7440020	9M	25.0	Y	N	438.06	48.65	610	0.998	0.997	WAC 173-201A, NTR
ZINC	7440666	13M	25.0	Y	N	35.36	32.29		0.996	0.996	WAC 173-201A,

TABLE 10: REASONABLE POTENTIAL TO EXCEED WATER QUALITY STANDARD

	Metal Criteria Translator as decimal		Ambient Concentration	State Water Quality Standard		Max concentration at edge of Mixing Zone					Max effluent conc. Measured					Dilution Factor		
	Acute	Chronic	(metals as dissolved)	Acute	Chronic	Acute	Chronic	**LIMIT REQ'D?**	Effluent percentile value		(metals as total recoverable)	Coeff Variation		# of samples	Multiplier	Acute	Chronic	
Parameter			*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*			*Pn*	*ug/L*	*CV*	*s*	*n*				COMMENTS (data as reported in application)
AMMONIA (as N)				5600	1200	1697.49	620.24	NO	0.95	0.549	11100.00	0.60	0.55	5	2.32	15.2	41.6	
CHROMIUM(HEX)	0.982	0.962		15	10	0.70	0.25	NO	0.95	0.807	7.00	0.60	0.55	14	1.54	15.2	41.6	0.0070
COPPER	0.996	0.996		4.61	3.47	2.42	0.88	NO	0.95	0.807	24.00	0.60	0.55	14	1.54	15.2	41.6	0.0240
LEAD	0.466	0.466		13.88	0.54	1.46	0.53	NO	0.95	0.807	31.00	0.60	0.55	14	1.54	15.2	41.6	0.0310
MERCURY	0.85			2.10	0.012	0.03	0.01	NO	0.95	0.807	0.30	0.60	0.55	14	1.54	15.2	41.6	0.0003
NICKEL	0.998	0.997		438.06	48.65	1.31	0.48	NO	0.95	0.807	13.00	0.60	0.55	14	1.54	15.2	41.6	0.0130
ZINC	0.996	0.996		35.36	32.29	12.10	4.42	NO	0.95	0.807	120.00	0.60	0.55	14	1.54	15.2	41.6	0.1200

TABLE 11: REASONABLE POTENTIAL TO EXCEED THE WATER QUALITY STANDARD FOR HUMAN HEALTH

Parameter	Ambient Concentration (Geometric Mean)	Water Quality Criteria for Protection of Human Health	Max concentration at edge of chronic mixing zone.	LIMIT REQ'D?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT	MAXIMUM DAILY EFFLUENT LIMIT	Estimated Percentile at 95% Confidence	Pn	Max effluent conc. measured	Coeff Variation	S	# of samples from which # in col. K was taken	Multiplier	Calculated 50th percentile Effluent Conc. (When n>10)	Dilution Factor	Conc. As reported in Application (mg/L)
	ug/L	*ug/L*	*ug/L*			*ug/L*	*ug/L*			*ug/L*	*CV*		*n*				
MERCURY		0.14	0.000	NO	1	NONE	NONE	0.50	0.81	0.03	0.60	0.6	14	0.62	0.00	41.6	0.00003
NICKEL		610	0.193	NO	1	NONE	NONE	0.50	0.81	13.00	0.60	0.6	14	0.62	0.00	41.6	0.013

TABLE 12: AMMONIA CRITERIA FOR FRESH WATER

Calculation Of Ammonia Concentration and Criteria for fresh water. Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

CRITICAL CONDITION USED LAST PERMIT

INPUT	
1. Ambient Temperature (deg C; 0<T<30)	16.0
2. Ambient pH (6.5<pH<9.0)	8.00
3. Acute TCAP (Salmonids present- 20; absent- 25)	20
4. Chronic TCAP (Salmonids present- 15; absent- 20)	15

OUTPUT	
1. Intermediate Calculations:	
Acute FT	1.32
Chronic FT	1.41
FPH	1.00
RATIO	14
pKa	9.53
Fraction Of Total Ammonia Present As Un-ionized	2.8683%
2. Un-ionized Ammonia Criteria	
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L)	197.0
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L)	41.9
3. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (mg NH3+ NH4/L)	6.9
Chronic Total Ammonia Criterion (mg NH3+ NH4/L)	1.5
4. Total Ammonia Criteria expressed as Nitrogen:	
Acute Ammonia Criterion as mg N	**5.6**
Chronic Ammonia Criterion as N	1.20

TABLE 13: pH LIMIT CALCULATION

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

Data from webpage, Ecology River and Stream Water Quality Monitoring Data

http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=470&wria=03&sta=03A080

INPUT	Case 1	Case 2	Case 3
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	41.600	41.600	41.600
1. UPSTREAM/BACKGROUND CHARACTERISTICS			
Temperature (deg C):	12.00	12.00	12.00
pH:	7.50	7.50	6.70
Alkalinity (mg CaCO3/L):	20.00	20.00	20.00
2. EFFLUENT CHARACTERISTICS			
Temperature (deg C):	22.00	22.00	15.00
pH:	6.20	6.00	9.00
Alkalinity (mg CaCO3/L):	125.00	125.00	125.00
OUTPUT			
1. IONIZATION CONSTANTS			
Upstream/Background pKa:	6.45	6.45	6.45
Effluent pKa:	6.37	6.37	6.42
2. IONIZATION FRACTIONS			
Upstream/Background Ionization Fraction:	0.92	0.92	0.64
Effluent Ionization Fraction:	0.40	0.30	1.00
3. TOTAL INORGANIC CARBON			
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	21.76	21.76	31.14
Effluent Total Inorganic Carbon (mg CaCO3/L):	309.24	417.00	125.33
4. CONDITIONS AT MIXING ZONE BOUNDARY			
Temperature (deg C):	12.24	12.24	12.07
Alkalinity (mg CaCO3/L):	22.52	22.52	22.52
Total Inorganic Carbon (mg CaCO3/L):	28.68	31.27	33.40
pKa:	6.44	6.44	6.45
pH at Mixing Zone Boundary:	7.01	6.85	6.76
delta pH (maximum allowed for class A fresh water = 0.5)	0.49	0.65	(0.06)

TABLE 14: SUMMARY OF DMR DATA – EFFLUENT

Analysis	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY PERCENT REMOVAL	CHLORINE, TOTAL RESIDUAL	CHLORINE, TOTAL RESIDUAL	COLIFORM, FECAL	COLIFORM, FECAL	PH	PH	SOLIDS, SUSPENDED, % REMOVAL	SOLIDS, TOTAL SUSPENDED	SOLIDS, TOTAL SUSPENDED	SOLIDS, TOTAL SUSPENDED	SOLIDS, TOTAL SUSPENDED
Units	AVG	AVG	AVW	AVW	AVG	AVG	MAX	GEM	GM7	MAX	MIN	AVG	AVG	AVG	AVW	MAX
	LBS/DAY	MG/L	LBS/DAY	MG/L	PERCENT	MG/L	MG/L	#/100 ML	#/100 ML	S.U.	S.U.	PERCENT	LBS/DAY	MG/L	LBS/DAY	MG/L
Design Criteria																
Limit	403	30	605	45	85	0.50	0.75	200.0	400	9	6.3	85	403	30	605	45
1-Nov-99	94	8	129	12	97	0.4	0.61	13	14	7.3	6.8	97	104	9	148	14
1-Dec-99	107	7	140	9	98	0.42	0.66	11	14	7.2	6.7	98	107	7	147	8
1-Jan-00	126	8	175	12	98	0.42	0.58	19	32	7.3	6.8	98	115	7	151	10
1-Feb-00	123	9	186	14	98	0.37	0.61	13	44	7.3	6.9	97	117	9	200	15
1-Mar-00	123	9	168	12	98	0.39	0.56	10	40	7.4	7	97	108	8	115	9
1-Apr-00	175	13	211	15	96	0.4	0.75	42	79	7.6	6.8	94	192	14	227	17
1-May-00	157	12	218	15	97	0.42	0.78	45	63	7.5	6.7	98	122	9	158	11
1-Jun-00	113	9	159	16	97	0.37	0.7	170	275	7.3	7	97	112	9	179	14
1-Jul-00	75	6	131	11	97	0.41	0.74	83	106	7.2	6.9	97	93	9	96	9
1-Aug-00	125	12	152	13	98	0.37	0.7	100	228	7.6	7	91	101	9	128	12
1-Sep-00	132	13	177	16	97	0.42	0.72	200	600	7.4	6.5	98	118	11	139	14
1-Oct-00	91	10	121	11	97			589	600	7.4	6.4	98	86	8	91	8
1-Nov-00	119	11	157	18	97			407	631	7.2	6.3	96	102	9	212	19
1-Dec-00	44	7	94	8	98			219	517	7.5	6.6	97	67	6	79	7
1-Jan-01	49	9	147	13	96			100	268	7.9	6.6	87	268	21	890	68
1-Feb-01	111	9	136	11	97			269	452	7.2	6.3	96	109	9	163	13
1-Mar-01	113	9	162	32	97			20	70	7.2	6.1	95	124	10	153	13
1-Apr-01	70	6	87	13	98			12	29	7.1	6.3	97	77	7	104	9
1-May-01	79	7	91	8	97			22	154	7	6.3	96	92	8	100	10
1-Jun-01	71	6	75	7	98			32	65	6.8	6	97	89	8	110	9
1-Jul-01	81	8	94	9	98			68	378	6.9	6.4	96	98	9	144	14
1-Aug-01	57	5	65	6	98			60	236	7.1	6.4	98	49	4	68	6
1-Sep-01	88	8	99	9	98			27	347	7	6.5	97	83	8	132	12
1-Oct-01	83	7	112	11	98			37	49	7.1	6.5	97	107	9	148	14
1-Nov-01	80	6	84	7	98			8	11	7	6.4	97	88	7	130	10
1-Dec-01	91	6	117	7	98			11	15	6.7	6.4	97	104	7	120	7
1-Jan-02	88	6	112	7	98			21	67	6.8	6.4	97	124	8	147	9
1-Feb-02	135	9	156	10	96			35	74	6.9	6.5	95	167	11	176	11
1-Mar-02	141	9	212	13	96			13	54	7.1	6.6	96	137	9	192	12
1-Apr-02	112	7	135	9	97			10	20	7.1	6.5	97	101	7	150	10
1-May-02	101	8	167	12	97			7	53	7.1	6.6	98	70	5	120	9
1-Jun-02	82	7	104	9	98			20	50	7	6.5	97	83	7	105	8
1-Jul-02	140	12	182	16	96			25	62	7.2	6.6	98	86	7	99	10
1-Aug-02	97	9	115	11	97			13	42	7.3	6.5	96	125	12	157	16
1-Sep-02	42	10	129	13	97			6	42	7	6.4	96	127	14	189	19
1-Oct-02	68	8	98	12	97			3	7	7.1	6.4	98	57	7	73	8
1-Nov-02	89	10	151	17	97			29	88	7.1	6.5	96	101	12	146	17
1-Dec-02	109	12	162	16	97			15	22	7.4	6.7	94	154	17	215	23
1-Jan-03	90	9	165	17	97			6	26	7.3	6.7	98	71	7	116	12
1-Feb-03	60	6	80	8	98			6	23	7.5	6.5	98	50	5	67	8
1-Mar-03	68	6	91	8	98			22	85	7.1	6.3	97	75	7	103	9
1-Apr-03	74	6	86	7	98			14	73	6.8	6.3	97	82	7	108	9
1-May-03	97	10	122	12	97			8	35	7.2	6.3	97	93	9	118	11
1-Jun-03	88	10	107	11	98			13	159	6.8	6.3	97	73	8	83	9
1-Jul-03	132	15	204	23	96			33	153	7.6	6.3	94	163	19	268	30
1-Aug-03	66	8	88	10	98			26	107	7.3	6.9	97	85	10	119	14
1-Sep-03	80	9	111	13	98			35	136	7.3	6.7	96	130	15	208	25
1-Oct-03	91	9	142	13	97			13	26	7.2	6.9	96	110	12	137	16
1-Nov-03	195	16	277	18	95			19	135	7.2	6.8	94	172	14	190	28
1-Dec-03	144	12	170	15	96			74	449	7.3	6.8	95	134	11	170	15
1-Jan-04	80	7	109	22	98			13	53	7.3	6.9	97	86	7	129	11
1-Feb-04	162	14	184	19	95			23	78	7.4	7	94	201	17	301	25
1-Mar-04	118	10	150	12	97			21	68	7.2	6.9	97	110	9	132	11
1-May-04	135	13	162	17	97			42	198	7.5	6.6	97	125	12	177	18
1-Jun-04	105	10	121	12	97			28	77	7.3	6.8	98	90	9	114	11
1-Jul-04	80	8	115	11	98			44	175	7.3	6.7	97	79	11	116	8
1-Aug-04	68	6	121	9	98			22	165	7.1	6.7	97	105	10	198	16
1-Sep-04	107	10	139	12	97			23	108	7.2	7	95	141	13	224	20
1-Oct-04	103	10	148	14	97			14	73	7.1	6.6	96	90	8	98	9
1-Nov-04	162	12	268	18	96			19	93	6.9	6.5	96	187	12	423	22
1-Dec-04	252	16	296	20	93			18	48	7	6.7	94	225	14	271	17
1-Jan-05	146	10	182	13	96			13	73	7.2	6.8	97	99	7	135	10
1-Feb-05	82	6	102	8	97			6	105	7.1	6.7	97	85	6	90	7
1-Mar-05	105	9	114	10	97			22	179	7.2	6.8	97	93	8	131	10
Maximum	252.0	16.0	296.0	32.0	98.0	0.4	0.8	589.0	631.0	7.9	7.0	98.0	268.0	21.0	890.0	68.0
Minimum	42.0	5.0	65.0	6.0	93.0	0.4	0.6	3.0	7.0	6.7	6.0	87.0	49.0	4.0	67.0	6.0
Average	104.2	9.1	141.6	12.7	97.1	0.4	0.7	52.5	137.5	7.2	6.6	96.3	111.2	9.6	161.4	13.8

TABLE 15: SUMMARY OF DMR DATA – INFLUENT

Analysis	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY (20 DEG. C)	BOD, 5-DAY (20 DEG. C)	FLOW, IN CONDUIT OR THRU TREATMENT PLANT	FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SOLIDS, TOTAL SUSPENDED	SOLIDS, TOTAL SUSPENDED	SOLIDS, TOTAL SUSPENDED	SOLIDS, TOTAL SUSPENDED
Units	AVG	AVG	AVW	MAX	AVG	MAX	AVG	AVG	AVW	MAX
	LBS/DAY	MG/L	MG/L	LBS/DAY	MGD	MGD	LBS/DAY	MG/L	MG/L	LBS/DAY
Design Criteri	7356			7356	3.79	3.79	7660			7660
Limit	6253	na	na	na	3.22	na	6511	na	na	na
1-Nov-99	3558	312	373	4340	1.384	1.515	3922	340	440	4852
1-Dec-99	5015	342	431	6175	1.78	2.706	5634	378	576	9384
1-Jan-00	5844	382	581	9376	1.837	2.06	5945	386	588	9209
1-Feb-00	5166	382	501	6969	1.609	1.724	5406	402	588	7979
1-Mar-00	5047	368	451	6327	1.654	1.923	4400	327	508	6780
1-Apr-00	4246	311	421	6626	1.631	2.316	4773	357	1043	7348
1-May-00	5021	382	641	8511	1.554	1.839	5763	444	1130	14362
1-Jun-00	4036	322	560	6968	1.514	1.7	4468	351	636	8609
1-Jul-00	2812	258	450	5416	1.308	1.443	3364	307	740	8319
1-Aug-00	5198	489	621	6614	1.289	1.443	1367	475	872	2473
1-Sep-00	4461	426	550	6160	1.237	1.378	3623	348	740	8239
1-Oct-00	4026	381	460	5037	1.278	1.367	3910	367	632	6610
1-Nov-00	3392	307	400	4637	1.329	1.581	3028	273	644	7170
1-Dec-00	3284	291	530	6060	1.355	1.533	2966	263	600	6690
1-Jan-01	3265	294	530	6476	1.422	1.612	2841	240	416	4968
1-Feb-01	3462	286	400	4824	1.451	1.589	3057	253	548	7002
1-Mar-01	3342	274	343	4302	1.447	1.604	2927	243	492	5761
1-Apr-01	3135	258	340	4460	1.46	1.637	2614	216	312	3817
1-May-01	3183	283	395	4381	1.345	1.495	2939	262	452	5287
1-Jun-01	3120	271	353	3719	1.404	1.8	3396	290	608	6333
1-Jul-01	3275	314	370	4083	1.247	1.47	2671	258	484	5340
1-Aug-01	3388	308	364	3953	1.321	1.613	2724	245	384	4897
1-Sep-01	3634	337	500	5354	1.292	1.466	3225	299	552	5760
1-Oct-01	1758	330	382	4991	1.417	1.868	3813	321	576	5972
1-Nov-01	1738	305	495	6614	1.57	1.844	3998	306	520	6948
1-Dec-01	1969	322	383	6644	1.866	2.638	4360	277	448	7525
1-Jan-02	1500	246	342	5067	1.767	2.209	4558	310	644	9222
1-Feb-02	3975	258	413	5811	1.88	2.428	3808	242	352	6682
1-Mar-02	3443	225	296	4537	1.839	2.069	3956	258	404	6169
1-Apr-02	3532	235	379	5234	1.795	1.992	4126	277	600	8622
1-May-02	3523	270	338	4505	1.563	1.84	3651	280	472	6290
1-Jun-02	3509	303	381	4620	1.417	1.606	3367	284	580	6859
1-Jul-02	3817	320	400	4466	1.431	1.584	3665	308	516	6206
1-Aug-02	3584	334	443	4578	1.297	1.402	3580	331	524	5716
1-Sep-02	3024	321	540	5801	1.106	1.379	3116	334	592	6349
1-Oct-02	2812	325	441	3807	1.03	1.126	2823	328	676	5886
1-Nov-02	2931	332	409	3670	1.042	1.271	2782	320	532	4774
1-Dec-02	3394	374	530	5074	1.093	1.315	2934	321	508	4864
1-Jan-03	3384	333	440	4973	1.205	1.458	3228	323	644	6155
1-Feb-03	3053	296	372	3596	1.255	1.606	3143	299	516	6911
1-Mar-03	3558	325	404	4545	1.291	1.406	2830	262	396	4250
1-Apr-03	3538	312	446	4858	1.374	1.55	3229	292	520	5675
1-May-03	3799	380	480	5060	1.197	1.319	3174	319	480	4604
1-Jun-03	4078	445	550	5133	1.103	1.19	3200	349	808	6617
1-Jul-03	3589	416	700	6212	1.03	1.116	2787	322	672	6255
1-Aug-03	3590	420	572	4742	1.043	1.116	2714	311	468	4321
1-Sep-03	3581	408	581	5107	1.061	1.227	3178	359	544	5004
1-Oct-03	3829	390	698	7847	1.173	1.646	3134	322	904	10163
1-Nov-03	3723	338	535	4966	1.344	2.29	3038	276	524	5144
1-Dec-03	3910	338	491	5397	1.386	1.584	3032	262	436	5382
1-Jan-04	3488	282	381	5437	1.48	2.051	3296	266	448	6393
1-Feb-04	3571	294	369	5149	1.463	1.815	3821	310	588	7218
1-Mar-04	3509	298	394	4577	1.426	1.568	3676	310	540	6345
1-May-04	4905	479	652	6868	1.233	1.586	5171	501	1056	10542
1-Jun-04	4272	398	616	6185	1.285	1.551	3855	361	732	7448
1-Jul-04	3678	378	535	4810	1.159	1.285	3052	317	600	5474
1-Aug-04	3900	383	569	5903	1.235	1.939	3465	337	748	10503
1-Sep-04	3625	322	386	4352	1.356	1.547	2953	259	400	4638
1-Oct-04	3400	316	384	4359	1.275	1.565	2684	253	400	3864
1-Nov-04	4017	307	353	6053	1.637	2.86	3949	297	552	9255
1-Dec-04	3670	238	314	4368	1.853	2.233	3897	252	616	9113
1-Jan-05	3687	240	359	5123	1.81	2.321	3304	219	372	6081
1-Feb-05	3087	226	335	4429	1.644	1.928	3047	223	352	4400
1-Mar-05	3723	305	378	4640	1.464	1.717	3440	282	450	5817
Maximum	5844.0	489.0	700.0	9376.0	1.9	2.9	5945.0	501.0	1130.0	14362.0
Minimum	1500.0	225.0	296.0	3596.0	1.0	1.1	1367.0	216.0	312.0	2473.0
Average	3618.5	327.3	453.6	5326.2	1.4	1.7	3528.1	307.9	573.4	6607.0

APPENDIX D—EPA NPDES APPLICATION (PART D) TESTING REQUIREMENTS

The following pollutant scan data are required at time of NPDES permit application for municipal treatment facilities with design flow greater than 1.0 mgd. At least three scans are required, conducted during the term of the previous permit.

METALS & MISC.	**VOL. ORGANICS (Cont.)**	**BASE NEUTRALS (Cont.)**
Antimony	Ethylbenzene	Bis (2-Chloroethyl)-Ether
Arsenic	Methyl Bromide	Bis (2-Chloroiso-Propyl) Ether
Beryllium	Methyl Chloride	Bis (2-Ethylhexyl) Phthalate
Cadmium	Methylene Chloride	4-Bromophenyl Phenyl Ether
Chromium	1,1,2,2-Tetrachloro-Ethane	Butyl Benzyl Phthalate
Copper	Tetrachloro-Ethylene	2-Chloronaphthalene
Lead	Toluene	4-Chlorphenyl Phenyl Ether
Mercury	1,1,1-Trichloroethane	Chrysene
Nickel	1,1,2-Trichloroethane	Di-N-Butyl Phthalate
Selenium	Trichlorethylene	Di-N-Octyl Phthalate
Silver	Vinyl Chloride	Dibenzo(A,H) Anthracene
Thallium		1,2-Dichlorobenzene
Zinc	**ACID EXTRACTABLES**	1,3-Dichlorobenzene
Cyanide	P-Chloro-M-Cresol	1,4-Dichlorobenzene
Total Phenolic Compounds	2-Chlorophenol	3,3-Dichlorobenzidine
Hardness (As $CaCO_3$)	2,4-Dichlorophenol	Diethyl Phthalate
	2,4-Dimethylphenol	Dimethyl Phthalate
VOLATILE ORGANICS	4,6-Dinitro-O-Cresol	2,4-Dinitrotoluene
Acrolein	2,4-Dinitrophenol	2,6-Dinitrotoluene
Acrylonitrile	2-Nitrophenol	Fluoranthene
Benzene	4-Nitrophenol	Fluorene
Bromoform	Pentachlorophenol	Hexachlorobenzene
Carbon Tetrachloride	Phenol	Hexachlorobutadiene
Clorobenzene	2,4,6-Trichlorophenol	Hexachlorocyclo-Pentadiene
Chlorodibromo-Methane		Hexachloroethane
Chloroethane	**BASE NEUTRALS**	Indeno(1,2,3-CD)Pyrene
2-Chloro-Ethylvinyl Ether	Acenaphthene	Isophorone
Chloroform	Acenaphthylene	Naphthalene
Dichlorobromo-Methane	Anthracene	Nitrobenzene
1,1-Dichloroethane	Benzidine	N-Nitrosodi-N-Propylamine
1,2-Dichloroethane	Benzo(A)Anthracene	N-Nitrosodi-Methylamine
Trans-1,2-Dichloro Ethylene	3,4 Benzo-Fluoranthene	N-Nitrosodi-Phenylamine
1,1-Dichloroethylene	Benzo(Ghi)Perylene	Phenanthrene
1,2-Dichloropropane	Benzo(K)Fluoranthene	Pyrene
1,3-Dichloro-Propylene	Bis (2-Chloroethoxy) Methane	1,2,4-Trichlorobenzene

APPENDIX E—RESPONSE TO COMMENTS

No comments were received.

The Department of Ecology made changes to the WET testing requirements from the version that was issued for public comment. Per the federal regulation [40 CFR 122.21 (j)(5)(iv)], the permit includes an additional round of WET testing at the end of the permit cycle to comply with the NPDES permit application requirements.